



Influence of feed additive based on Leiber® Brewers' Yeast-BT on physical condition, fur quality, coat change, and faecal texture in older horses

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Horses older than 20 years are often referred to as old horses or seniors' horses. However, the actual ageing process often starts much earlier, between the ages of 15 and 20 years. The University of Economics and Environment in Nürtingen (KRAFT, 2013) surveyed approximately 3,500 horse owners all over Germany, among other things about the age of their animals. 34% of the ponies and horses were older than 20 years. The biggest age group was made up of 14-year-old ponies and horses. An international survey by BUSHELL & MURRAY (2014) involving 1,324 horse owners also found that horses are getting increasingly older. 28.4% of the horses were older than 16 years and 2% even older than 30 years. Horse owners and horses often have a very close emotional bond, and the willingness of horse owners to invest in the health and longevity of their horse is accordingly high.

IRELAND et al. (2011) consider the fact that horses lose weight in old age, among other things, to be a natural development. With old age, the entire organ system and thus all cell processes slow down. Many older horses often suffer loss of appetite, indigestion and problems with coat change. FAHLBUSCH and VERVUERT (2014) saw increased issues with the muscular system in horses between 15 and 20 years of age, followed by colic and respiratory problems. They also saw that the survival rate after colic decreased significantly with age. The objective of the practical experiment described below is to examine whether supplementary feed based on **Leiber® Brewers' Yeast-BT** can support older horses with age-specific issues such as weight loss, digestive disorders (e.g. faecal water), or even coat change problems.

Experimental setup:

6 horses and 3 ponies with an approximate average age of 19 years were kept in a standard stable for old horses in herds (active stable) with computer-controlled feeding. The horses were separated into 2 homogeneous groups according to age, weight, BCS and size of the animals (see Tab. 1).

Tab. 1: Average values of the classification criteria

	Experimental group	Control group
Age (years)	19.0	19.2
Weight (kg)	4754	473.0
BCS	5.2	5.3
Height (cm)	151.6	152.4
Quantity	4	5



All horses received hay daily via a computer-controlled feeding rack and straw through the litter. The daily supply of concentrated feed was adjusted as needed via a computer-controlled concentrate dosing apparatus. The horses received pelleted feed additives, mineral feed and oats daily as well as up to 150g **Leiber® Brewers' Yeast-BT**.

The trial period lasted a total of 9 months, from September 2015 until May 2016. Table 2 provides an overview of all recorded parameters and methods as well as the recording frequency during the trial period.

Tab. 2: Overview of the trial parameters

Recorded parameters	Method	Frequency of recording	Quantity of recording
Weight	Scale	monthly	9 times
BCS	Scoring (according to SCHRAMME, 2003)	every 2 months	5 times
Subcutaneous fat thickness	Ultrasound measurement (according to NORDHOFF, 2014)	every 2 months	5 times
Stool colour	Qualitative assessment	every 2 months	5 times
Stool consistency	Scoring	every 2 months	5 times
Stool dry substance	Drying cabinet	every 2 months	5 times
Stool pH value	pH meter	every 2 months	5 times
Coat/fur, mane, skin	9 evaluation points	monthly	9 times
Photo documentation	Photo camera	monthly from December on	6 times
Owner survey	Questionnaire	Beginning, middle, end	3 times

In addition to skin and fur quality, the course and duration of the coat change during the trial period were also assessed. The overall impression of the horses was documented with photos and by questioning the horse owners using a standardized questionnaire. The entire study was conducted as a blind study. Neither the horse owners nor the nursing staff or the students knew which horse or pony belonged to the experimental group. A 4-month field study was simultaneously carried out in 12 private households throughout Germany. The same standardized questionnaire as in the above referenced experimental set-up was used. BEFORE/AFTER reports as well as photos from 8 participants of the practical study were evaluated. The average age of the horses was 25.4 years. The preliminary report showed that all horses (4) and ponies (4) exhibited age-typical problems such as slowed coat change (part. ECS), poor fur quality, faecal water, flatulence and bad eating habits.

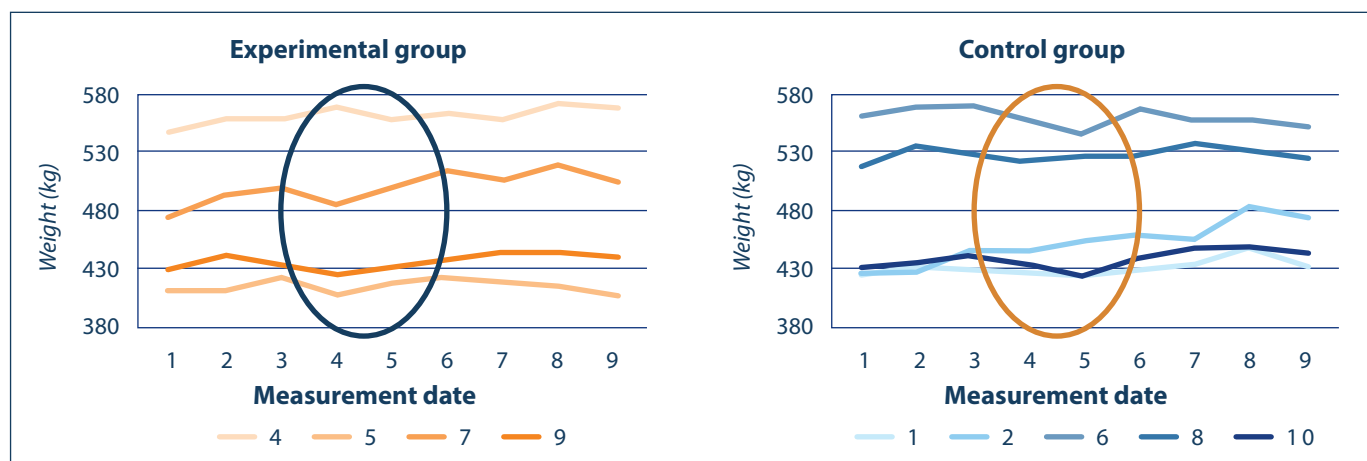
Results:

All horses in the experimental group were able to maintain or gain weight by the end of the trial period. On average, the horses gained about 15kg body weight over the entire trial period. Horse number 7 showed the highest weight gain with about 30kg. By contrast, almost all horses in the control group fell below their original weight by the end of the experiment. This development was also reflected in the recorded BCS and subcutaneous fat thickness measurements.



On average, BCS was 5.5 in the experimental group and 4.9 in the control group. The subcutaneous fat thickness measurement also revealed slight advantages in all horses of the experimental group, especially at measuring points M2 and M3. In a previous study with young sport horses in training (NORDHOFF et al., 2014) supplemented with identical brewer's yeast based feed additive, exhibited more stable body weight and BCS development as well as a significantly better subcutaneous fat thickness at all 3 measuring points (M2, M3, Swfh) over the entire trial period. NORDHOFF et al. (2014) suggested that the increase in body fat reserves and body weights gave the test horses advantages in dealing with stress. On top of that, the better weight gains could be related to better nutrient digestion facilitated by the brewer's yeast supplement.

Fig. 1: Live weight (scale) of the experimental and control group over the entire experimental period



In both the experimental and the control group, the weight development in Figure 1 shows the heavy burden on the old horses caused by coat change. Measuring points 4 and 5 indicate the times at which all horses completed their winter coat change. All horses lost significant weight after coat change, but the horses of the experimental group exhibited less weight loss and could compensate for it faster. However, the horses of the control group could not make up for the weight loss before the second coat change at measuring point 9 and instead showed more weight loss. In contrast, the experimental group exhibited lower weight loss in the second coat change (measurement point 9) again, and in part even weight gain. Especially older horses that might not have the opportunity to rebuild their weight during the summer (e.g. by grazing) will come under pressure again at the next coat change. These slow weight losses, which can sometimes be observed over many years, should definitely be avoided, especially with old horses.

Leiber® Brewers' Yeast-BT reduces weight fluctuations in older horses during coat change.

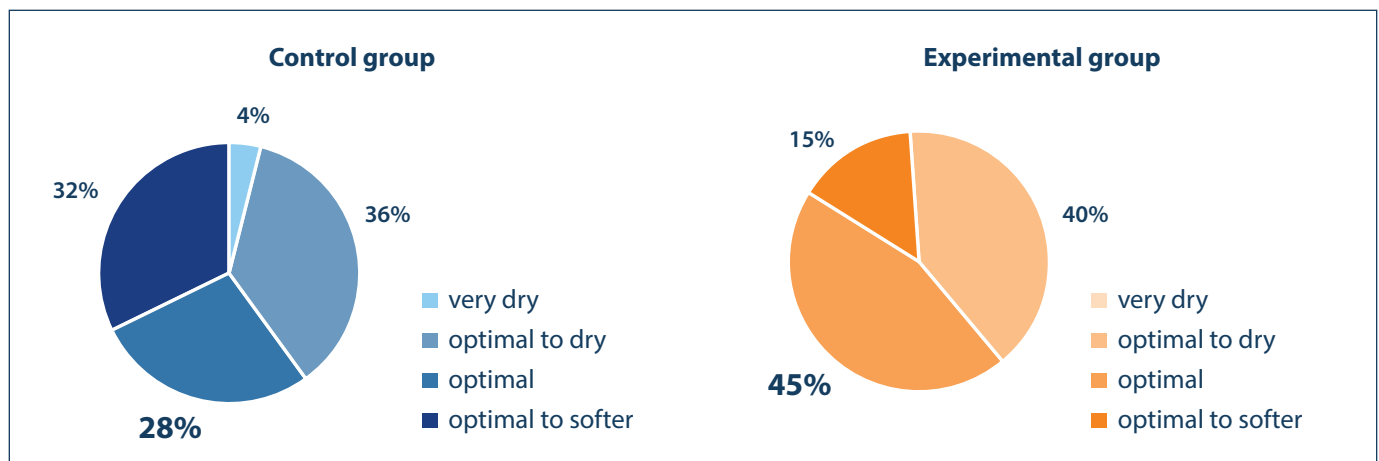
Leiber® Brewers' Yeast-BT can provide positive support for older horses in the critical phase of coat change. This way, very slow weight losses can possibly be avoided, which should be viewed as a very positive outcome for older horses, especially with an ECS background. 5 out of 8 horses also showed significantly improved weight gain as well as a better general condition in the field study. The horses had more appetite, were more alert and balanced. Old horses that were ridden regularly at the same time, showed improved muscle buildup.



Optimal stool texture through Leiber® Brewers' Yeast-BT

Stool examination showed that 45% of stool samples in the experimental group were considered optimal for stool consistency. This is contrasted by only 28% in the control group. 32% of the stool samples of the control group were rated as too soft and 4% as very dry (see Fig. 2). The result was confirmed by the evaluation of the TS contents, where 60% of the samples from the experimental group were in the optimal range in contrast to the control group with only 44% of stool samples. The positive result with regard to an optimized stool consistency from a previous study with young sport horses in training (NORDHOFF et al., 2014) could thus be confirmed. In the study of NORDHOFF et al. (2014), the test horses also showed significant improvement in the optimal range in terms of stool consistency despite feed conversion within a very short time. A significant improvement of the stool consistency was also found within the practical field study. 4 horses were described in the preliminary report to have faecal water, one horse with very hard faeces and 2 with flatulence. All 7 horses showed significantly improved stool quality at the end of the test. For example, hard stool was now described as softer or more optimal and flatulence could be significantly reduced. Faecal water problems could be significantly improved or completely eliminated in the field study. In total, 7 out of 8 participants (87.5%) of the field study described a positive influence on optimal stool quality by **Leiber® Brewers' Yeast-BT** feed additive.

Fig. 2: Stool consistency of the experimental and control group over the entire experimental period



Leiber® Brewers' Yeast-BT improves fur quality and overall impression

Especially older horses often exhibit problems during coat change. Often it takes too long or is incomplete, and the fur looks dull, shaggy and long. This gives rise to an ideal breeding ground for lice, dandruff, eczema or skin fungus infections, which put even more stress on the older horse and his immune system. Figures 3 to 5 show the positive effect of the feed additive based on **Leiber® Brewers' Yeast-BT** on the fur quality and overall impression of the horses and ponies in the experiment. The majority of the test horses received significantly higher scores than the control group in the assessment of fur gloss (Fig. 3) and in fur structure (Fig. 5) and overall impression (Fig. 6). The older horses of the experimental group were thus much more likely

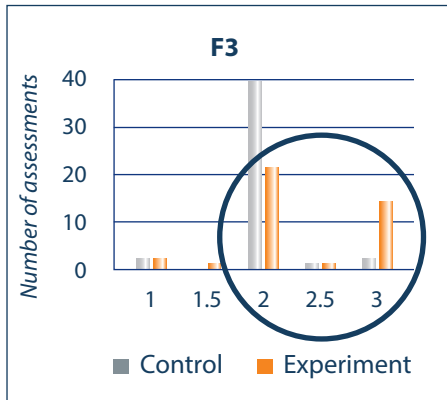


Fig. 3: Coat gloss
1 = dull, 2 = normal, 3 = shiny

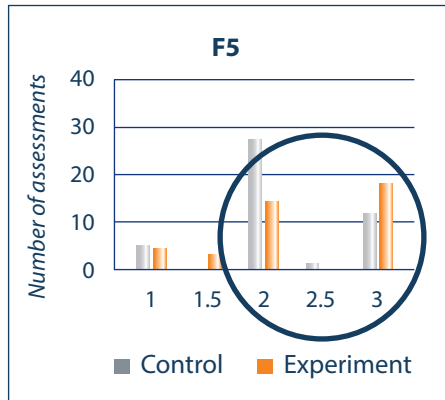


Fig. 4: Fur structure
1 = shaggy, 2 = normal, 3 = smooth

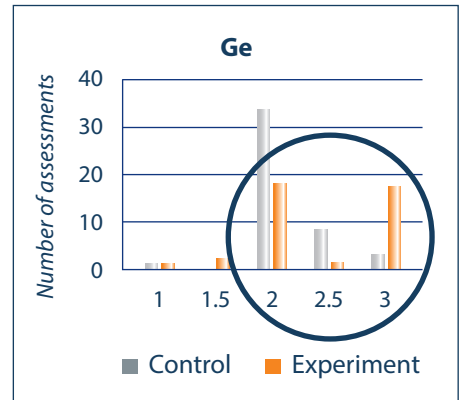


Fig. 5: Overall impression
1 = bad, 2 = normal, 3 = good

to exhibit shiny and smooth fur and a good appearance than the horses that were not supplemented with the brewer's yeast. Within the field study, almost all participants in the preliminary report described bad coat quality of their horses. 75% of all horses exhibited significantly better fur quality and improved long hair growth by the end of the test.

Fast coat change through Leiber® Brewers' Yeast-BT

The overall positive outside impression of the test horses was also reflected in the observation of the coat change (see Tab. 3). The horses of the experimental group were much more homogeneous in the course of the first coat change in winter (measurement point 2 and 3). On average, they were preoccupied with the coat change for about 8 weeks, while the horses of the control group were preoccupied over a longer period (measurement 1 to 3). This was also evident in the second coat change in spring (measurement points 7 and 8). Again, the test horses experienced much faster coat changes than the control group. At measuring point 9 in May 2016, only the horses from the test group were showing almost complete coat changes, while all control group horses were still in the middle of the coat change.

In the preliminary field study report, most participants described problems from significantly slower coat change to Equine Cushing Syndrome (ECS). Often the horses had kinky fur and had to be assisted with scissors during coat changes. At the end of the experiment, 75% of all horses underwent a much faster coat change with better fur quality.

Tab. 3: Qualitative assessment of coat change over the entire trial period (September 2015 to May 2016)

	Horse	Measurement date								
		1	2	3	4	5	6	7	8	9
Experiment	4	1	2	2	3	3	1	1.5	1.5	2.5
	5	1	2	2	3	3	1	2	2	2
	7	1	2	2	3	3	1	2	2	2.5
	9	1.5	2	2	3	3	1	1.5	2	2
Control	1	1.5	2	3	3	3	1	1	2	2
	2	1	2	2	3	3	1	2	2	2
	6	1.5	1.5	2	3	3	1	1	2	2
	8	2	2	3	3	3	1.5	2	2	2
	10	1.5	2	2	3	3	1	2	2	2

- = coat change not started yet
- = coat change early phase
- = coat change active phase
- = coat change late phase
- = coat change completed



Summary:

Within a 9-month trial period, it was discovered that the coat change for older horses is quite stressful, which can be reflected, among other things, in gradual weight loss. According to RALSTON and HARRIS (2013), this could be due to the weakened mechanism of thermoregulation in older horses, causing the animals to have higher energy consumption or need. Older horses with the **Leiber® Brewers' Yeast-BT** additive exhibited lower weight loss during the coat change and faster and more stable recovery with simultaneously better resistance in the BCS. Feeding with **Leiber® Brewers' Yeast-BT** may alleviate seasonal weight fluctuations in old horses, presumably through improved nutrient supply. This result was also confirmed in the practical application observation in private households.

The assessment of stool consistency was much more frequently within the optimal range in the experimental group than in the control group. A significant improvement of the stool quality was observed in the field study in horses with flatulence, very hard stools, but also faecal water. All this demonstrates a significant tendency for optimum stool quality in horses using brewer's yeast supplement and thus confirms the results from a comparable study on young sport horses (NORDHOFF et al., 2014), where better stool quality of the experimental group was also found.

In the evaluation of the coat change, the horses with brewer's yeast supplement were rated as more advanced. The coat change was more homogeneous and faster in the experimental group compared to the control group. Also, the horses of the experimental group were more likely to have a shiny and smooth coat and a good overall impression than the control group. The positive influence of supplementing with an additive based on **Leiber® Brewers' Yeast-BT** on fur quality, coat change and overall impression can thus be seen. This was also confirmed in the field study in which 75% of the participants described a significantly improved fur quality and faster coat change.

In summary, it can be concluded that daily administration of **Leiber® Brewers' Yeast-BT** can definitely support older horses with typical age-related problems such as weight loss, indigestion or even problems with fur quality and coat change.

Leiber® Brewers' Yeast-BT in older horses:

- | reduces weight fluctuation during coat change through faster and more steady recovery after stress situations
- | optimal stool quality
- | shinier and smoother fur as well as better overall impression
- | faster and briefer coat change
- | confirmation of the results from the study by NORDHOFF et al. (2014) with regard to the positive impact of the stool consistency and weight development in stress situations in a young sport horse

For more information:

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Reference: DAMM A-M, HAGEMANN S, NEUHAHN L.A, SITZENSTOCK F, WESTENDARP H; University of Osnabrück; Faculty of Agricultural Sciences and Landscape Architecture; Project Work (2016)



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